

What is claimed is:

1. A medical device comprising:  
a coil having a longitudinal axis and a radial axis orthogonal to the longitudinal axis, formed from a wire comprising:
  - (a) a cross-section with a centroid;
  - (b) a moment of inertia with respect to an axis running through the centroid and parallel to the longitudinal axis of the coil; and
  - (c) a moment of inertia with respect to an axis running through the centroid and parallel to the radial axis of the coil, wherein the moment of inertia with respect to an axis running through the centroid and parallel to the longitudinal axis of the coil is greater than the moment of inertia with respect to an axis running through the centroid and parallel to the radial axis of the coil.
2. The medical device according to claim 1, wherein the wire cross-section is a polygonal shape.
3. The medical device according to claim 1, wherein the wire cross-section is an ellipse shape.
4. The medical device according to claim 1, wherein the wire cross-section is an I-Beam shape.
5. The medical device according to claim 1, wherein the wire is formed of a material with a Poisson's ratio from 0.25 to 0.5.
6. The medical device according to claim 1, wherein the coil further comprises a second coil having windings disposed between windings of the coil.
7. The medical device according to claim 1, wherein the wire is a composite wire comprising:

- (a) a cross-section with a centroid, a wire longitudinal axis parallel to the coil longitudinal axis and a wire radial axis parallel to the coil radial axis;
- (b) a first material having a first Young's Modulus at the centroid; and
- (c) a second material having a second Young's Modulus further away from the centroid along the wire radial axis; wherein the second Young's Modulus is greater than the first Young's Modulus.

8. The medical device according to claim 7, wherein the wire cross-section is a circular shape.

9. The medical device according to claim 7, wherein the wire cross-section is a polygonal shape.

10. A medical guidewire comprising:

- (a) an elongated shaft including a proximal region having a first outer diameter and a distal region having a second outer diameter that is smaller than the first outer diameter;
- (b) a coil member connected to the elongated shaft at the distal end of the proximal region and extending from the distal end of the proximal region over at least a portion of the distal region, the coil member having an inner diameter that is greater than the second outer diameter, wherein the coil has a longitudinal axis and a radial axis orthogonal to the longitudinal axis, formed from a wire comprising:
  - (i) a cross-section with a centroid;
  - (ii) a moment of inertia with respect to an axis running through the centroid and parallel to the longitudinal axis of the coil; and
  - (iii) a moment of inertia with respect to an axis running through the centroid and parallel to the radial axis of the coil, wherein the moment of inertia with respect to an axis running through the centroid and parallel to the longitudinal axis of the coil is greater

than the moment of inertia with respect to an axis running through the centroid and parallel to the radial axis of the coil.

11. The medical guidewire according to claim 10, wherein the wire cross-section is a polygonal shape.

12. The medical guidewire according to claim 10, wherein the wire cross-section is a ellipse shape.

13. The medical guidewire according to claim 10, wherein the wire cross-section is an I-Beam shape.

14. The medical guidewire according to claim 10, wherein the wire is formed of a material with a Poisson's ratio from 0.25 to 0.5.

15. The medical guidewire according to claim 10, wherein the coil further comprises a second coil having winding disposed between windings of the coil.

16. The medical guidewire according to claim 10, wherein the wire is a composite wire comprising:

- (a) a cross-section with a centroid, a wire longitudinal axis parallel to the coil longitudinal axis and a wire radial axis parallel to the coil radial axis;
- (b) a first material having a first Young's Modulus at the centroid; and
- (c) a second material having a second Young's Modulus further away from the centroid along the wire radial axis; wherein the second Young's Modulus is greater than the first Young's Modulus.

17. The medical device according to claim 16, wherein the wire cross-section is a circular shape.

18. The medical device according to claim 16, wherein the wire cross-section is a polygonal shape.

19. A medical device comprising:  
a coil having a longitudinal axis and a radial axis orthogonal to the longitudinal axis, formed from a composite wire comprising:

- (a) a cross-section with a centroid, a wire longitudinal axis parallel to the coil longitudinal axis and a wire radial axis parallel to the coil radial axis;
- (b) a first material having a first Young's Modulus at the centroid; and
- (c) a second material having a second Young's Modulus further away from the centroid along the wire radial axis; wherein the second Young's Modulus is greater than the first Young's Modulus.

20. The medical device according to claim 19, wherein the wire cross-section is a circular shape.

21. The medical device according to claim 19, wherein the wire cross-section is a polygonal shape.

22. The medical device according to claim 19, wherein the wire cross-section is a rectangular shape.

23. The medical device according to claim 19, wherein the wire cross-section is a ellipse shape.

24. The medical device according to claim 19, wherein the wire cross-section is an I-Beam shape.

25. The medical device according to claim 19, wherein the wire is formed of a material with a Poisson's ratio from 0.25 to 0.5.

26. A medical guidewire comprising:
- (a) an elongated shaft including a proximal region having a first outer diameter and a distal region having a second outer diameter that is smaller than the first outer diameter;
  - (b) a coil member connected to the elongated shaft at the distal end of the proximal region and extending from the distal end of the proximal region over the distal region, the coil member having an inner diameter that is greater than the second outer diameter, wherein the coil having a longitudinal axis and a radial axis orthogonal to the longitudinal axis, formed from a composite wire comprising:
    - (i) a cross-section with a centroid, a wire longitudinal axis parallel to the coil longitudinal axis and a wire radial axis parallel to the coil radial axis;
    - (ii) a first material having a first Young's Modulus at the centroid; and
    - (iii) a second material having a second Young's Modulus further away from the centroid along the wire radial axis; wherein the second Young's Modulus is greater than the first Young's Modulus.
27. The medical guidewire according to claim 26, wherein the wire cross-section is a circular shape.
28. The medical guidewire according to claim 26, wherein the wire cross-section is a polygonal shape.
29. The medical guidewire according to claim 26, wherein the wire cross-section is a rectangular shape.
30. The medical guidewire according to claim 26, wherein the wire cross-section is an ellipse shape.

31. The medical guidewire according to claim 26, wherein the wire cross-section is an I-Beam shape.

32. The medical guidewire according to claim 26, wherein the wire is formed of a material with a Poisson's ratio from 0.3 to 0.5.